

## **DRAFT**

### **ARSG Timeline for Reducing Metal Loading in Upper Animas River Basin 7/22/14**

Below is a realistic timeline for addressing the major, mining-related metal loading issues in the upper Animas River Basin. ARSG believes it is unlikely that this timeline will become condensed (*i.e.* shorter), and it is quite possible the timeline could be extended. There are a number of factors (legal and financial) that may affect the timing of certain actions below and that are beyond the control of the group as a whole.

|    |  |                 |
|----|--|-----------------|
| 1  | Continue to Gather the Requisite Knowledge to Understand the Problem     | Ongoing         |
| 2  | Continue to Pursue Innovative Technologies to Address the Problem        | Ongoing         |
| 3  | Pursue Funding and Resources for Solution <i>See Appendix 1</i>          | Present - 2016  |
| 4  | Undertake Preparatory Work to Bulkhead Red & Bonita                      | 2014            |
| 5  | Open Up and Explore Gold King #7 Level for Potential Remediation Actions | 2014            |
| 6  | Characterize Arrastra Gulch  | December 2014   |
| 7  | Finalize EPA Risk Assessment   | May 2015        |
| 8  | Bulkhead Red & Bonita  | 2015            |
| 9  | Analyze Impact of Red & Bonita Bulkhead                                  | Commencing 2015 |
| 10 | Select Preferred Solution <i>See Appendix 2</i>                          | November 2016   |
| 11 | Commence Engineering of Preferred Solution                               | December 2016   |
| 12 | Implementation of Preferred Solution                                     | June 2017       |

Under certain circumstances, up to \$14 million may be available for the preferred solution, not including potential EPA funding for bulkheading the Red & Bonita and opening up the Gold King. There is possibly funding from other sources as well.

*Todd Hennis suggested adding or incorporating in some fashion:*

"In recognition of the "roadmap" submitted by Sunnyside Gold Corp., the most significant contribution SGC could make to improving water quality in the Animas watershed would be to voluntarily fund the establishment and running of a 350 gpm water treatment plant for the American Tunnel and Gold King discharges. In conjunction with the proposed bulkhead closure of the Red and Bonita Mine, and the potential use of the ASARCO funds for construction costs, the fact that SGC stepped forward with the funding of the treatment plant without preconditions should also alleviate the concerns of the E.P.A."

**Additionally, these two Appendices from Sunnyside Gold could be added:**

#### **APPENDIX 1:**

The monies previously offered by Sunnyside Gold Corporation, the availability of which is dependent on SGC obtaining satisfactory documentation recognizing that it has no liabilities in the District, will have grown, through compounding, to approximately Ten Million Dollars by the date of Step 12. There may be other opportunities to garner additional support from other parties.

## **APPENDIX 2:**

Solutions might include passive treatment; additional bulkheading; lime treatment; etc. Step 2 is the continuation of the pursuit of innovative technologies to address the problem. Step 3 involves the pursuit of funding and resources beyond those already dedicated. Step 10 will fully investigate all reasonable solutions.

It is important to note that, even if no alternative technologies are selected and no additional funding or resources are obtained, there would be significant improvements to the Animas.

Assuming the availability of only \$10M ("Base Case;"), SGC estimates that a 300 gpm lime treatment plant could be built for approximately \$4M, leaving approximately \$6M for O&M. (Utilizing a 7% discount rate, this would allow the plant to run for around 20 years.) SGC estimates that with the Base Case plant treating Cement Creek water fairly near Gladstone would reduce low flow Zn levels at CC-48 and A-72 respectively by approximately 41% and 18%.

Success with Step 3 would result in significant additional improvement, even if lime treatment were to be the Preferred Solution. Two examples: 1) SGC estimates that treating the water directly from the major adits with a 300 gpm plant would reduce low flow Zn levels at CC48 and A-72 respectively by approximately 67% and 34%; and 2) SGC estimates that a 1,000 gpm plant (\$15M combined Capital and Operating expenses) treating Cement Creek water fairly near Gladstone would reduce low flow Zn levels at CC-48 and A-72 respectively by approximately 81 % and 34%.